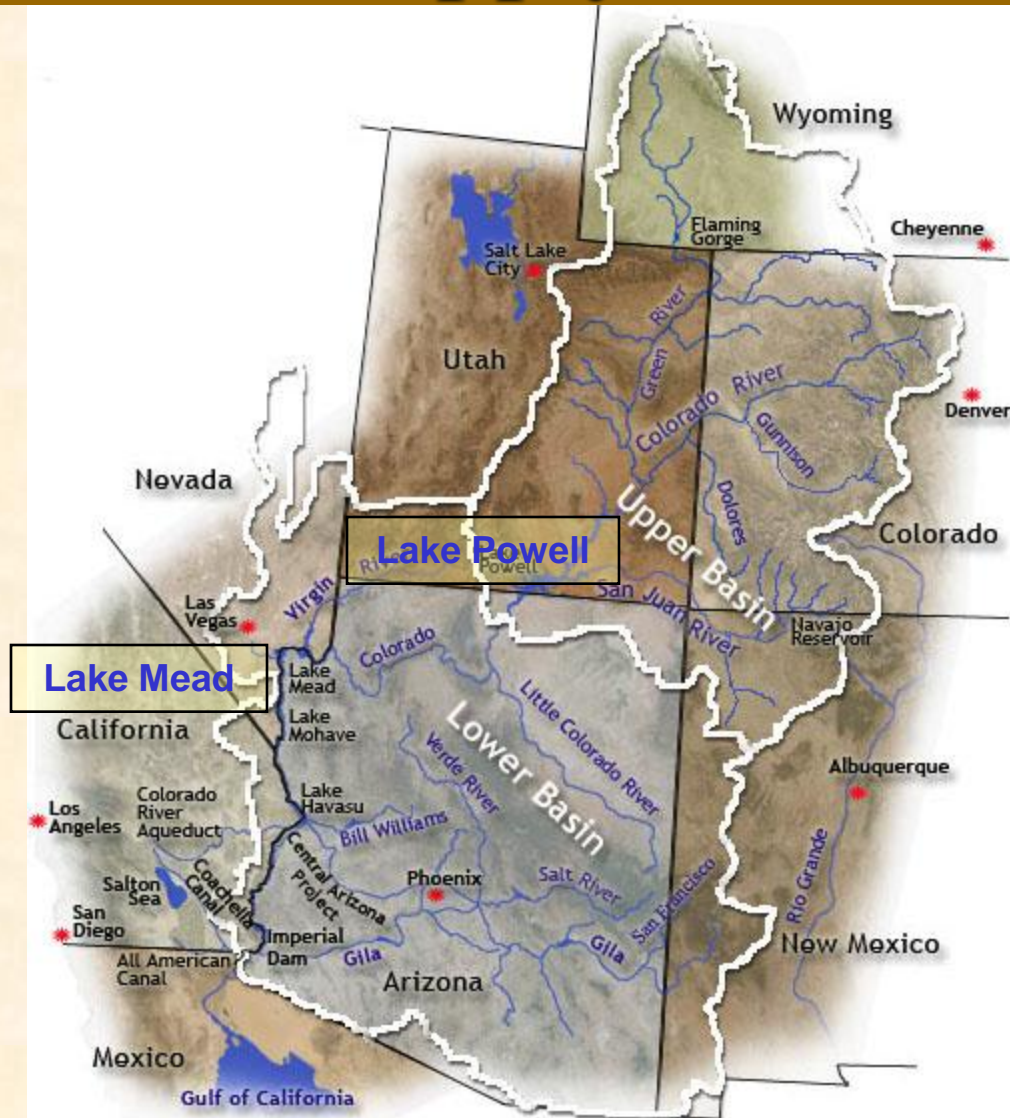
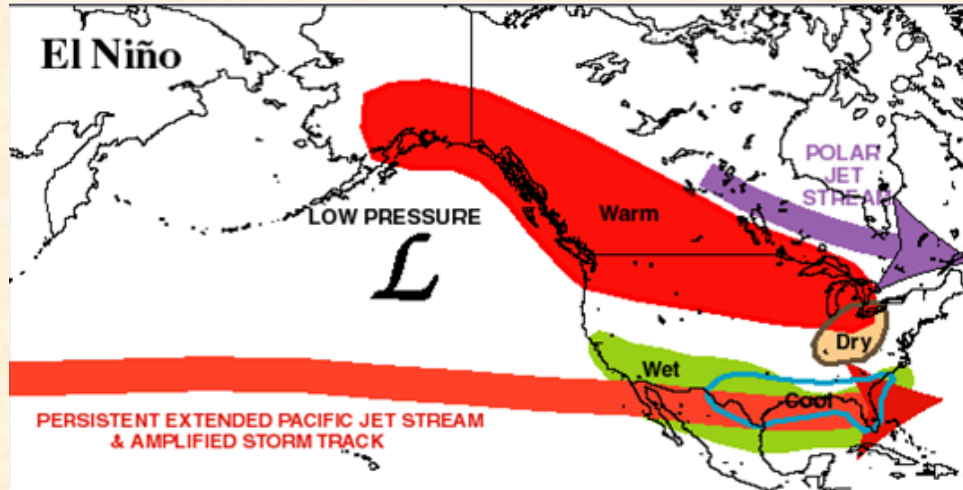


# Colorado River Basin Water Supply Outlook

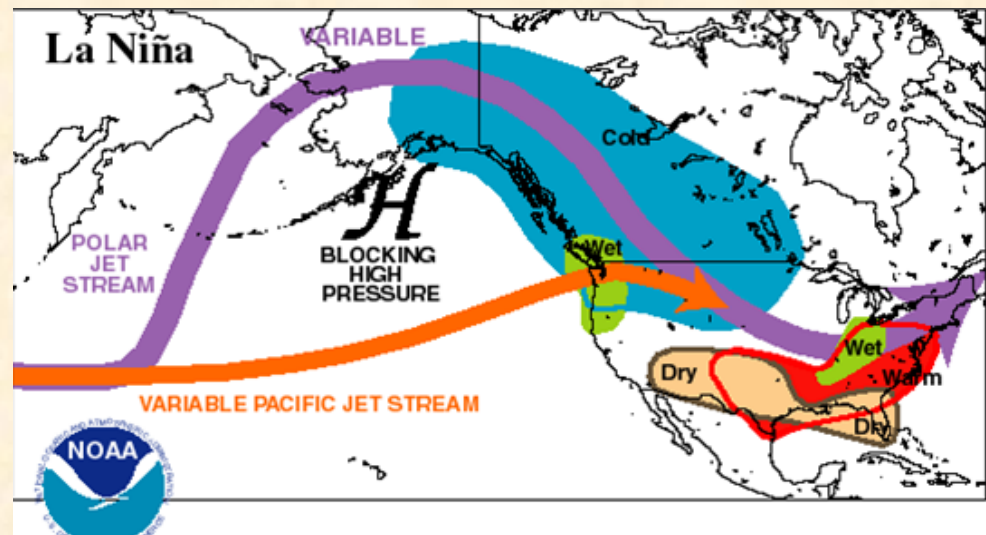


# El Niño/La Niña Years/ENSO Neutral? ! ?

## Good ? Bad ?



**TYPICAL JANUARY-MARCH WEATHER ANOMALIES  
AND ATMOSPHERIC CIRCULATION  
DURING MODERATE TO STRONG  
EL NIÑO & LA NIÑA**

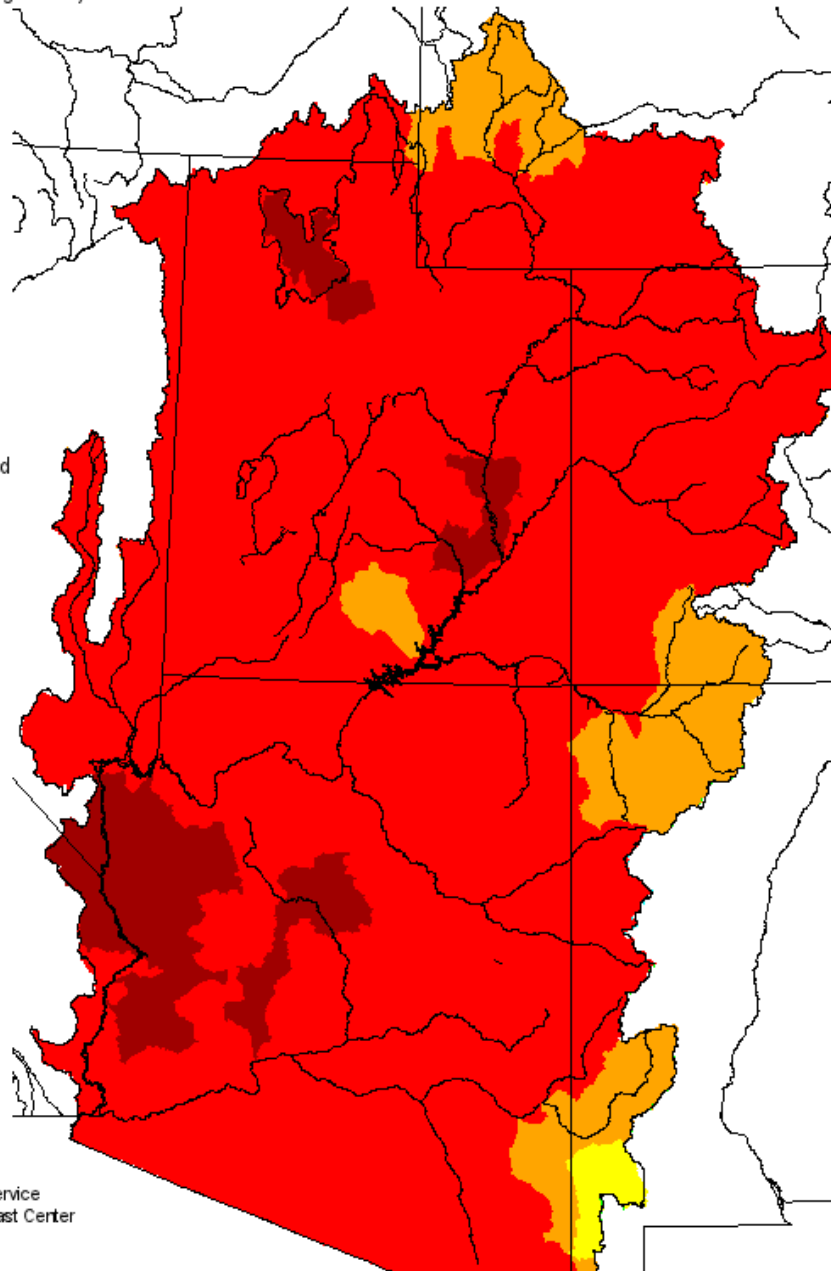
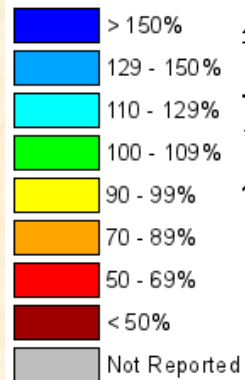


**Water Year 2012 - Bad**  
**Water Year 2013 – Not Very Good Either !**

# Seasonal Precipitation, October 2011 - April 2012

(Averaged by Hydrologic Unit)

## % Average

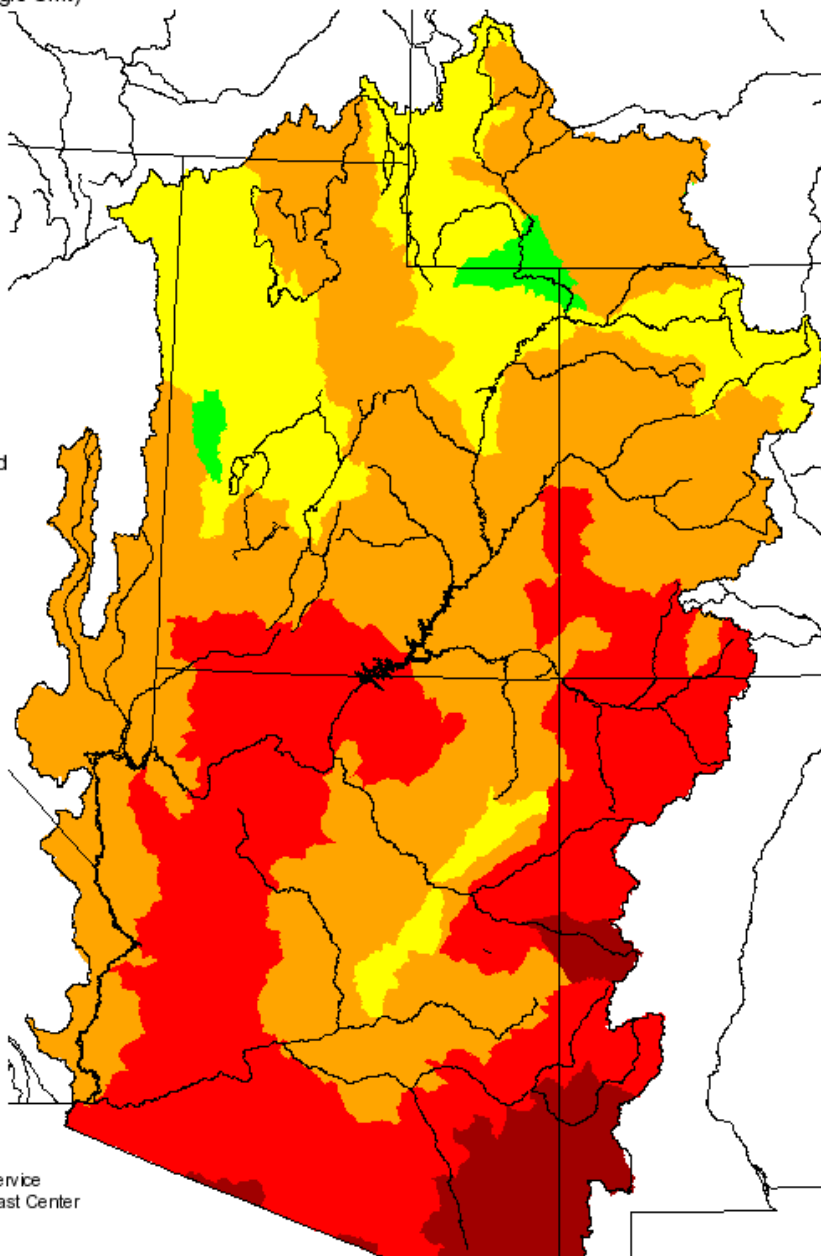
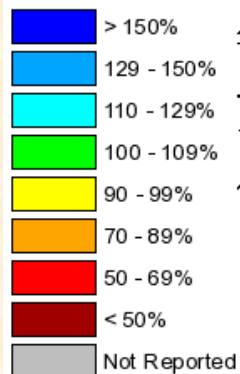


Prepared by  
NOAA, National Weather Service  
Colorado Basin River Forecast Center  
Salt Lake City, Utah  
[www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

# Seasonal Precipitation, October 2012 - April 2013

(Averaged by Hydrologic Unit)

## % Average

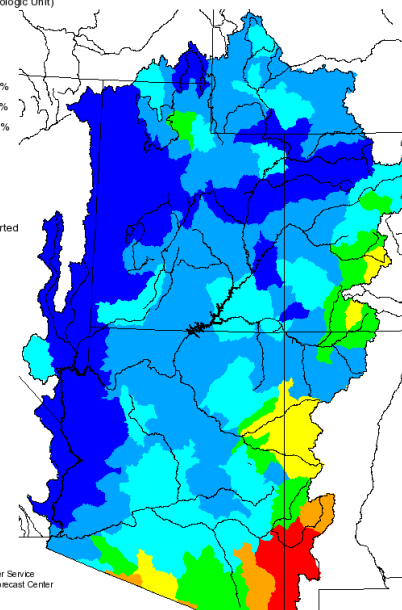
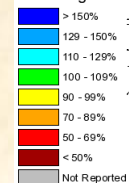


Prepared by  
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Colorado Basin River Forecast Center  
Salt Lake City, Utah  
[www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

## Monthly Precipitation for December 2012

(Averaged by Hydrologic Unit)

### % Average

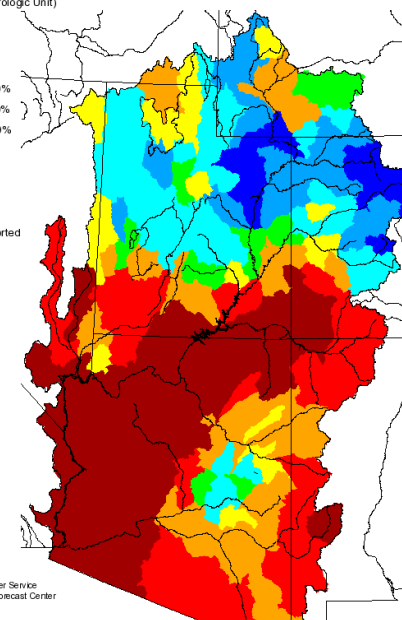
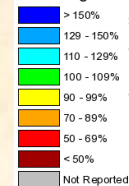


Prepared by  
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Colorado Basin River Forecast Center  
Salt Lake City, Utah  
[www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

## Monthly Precipitation for April 2013

(Averaged by Hydrologic Unit)

### % Average

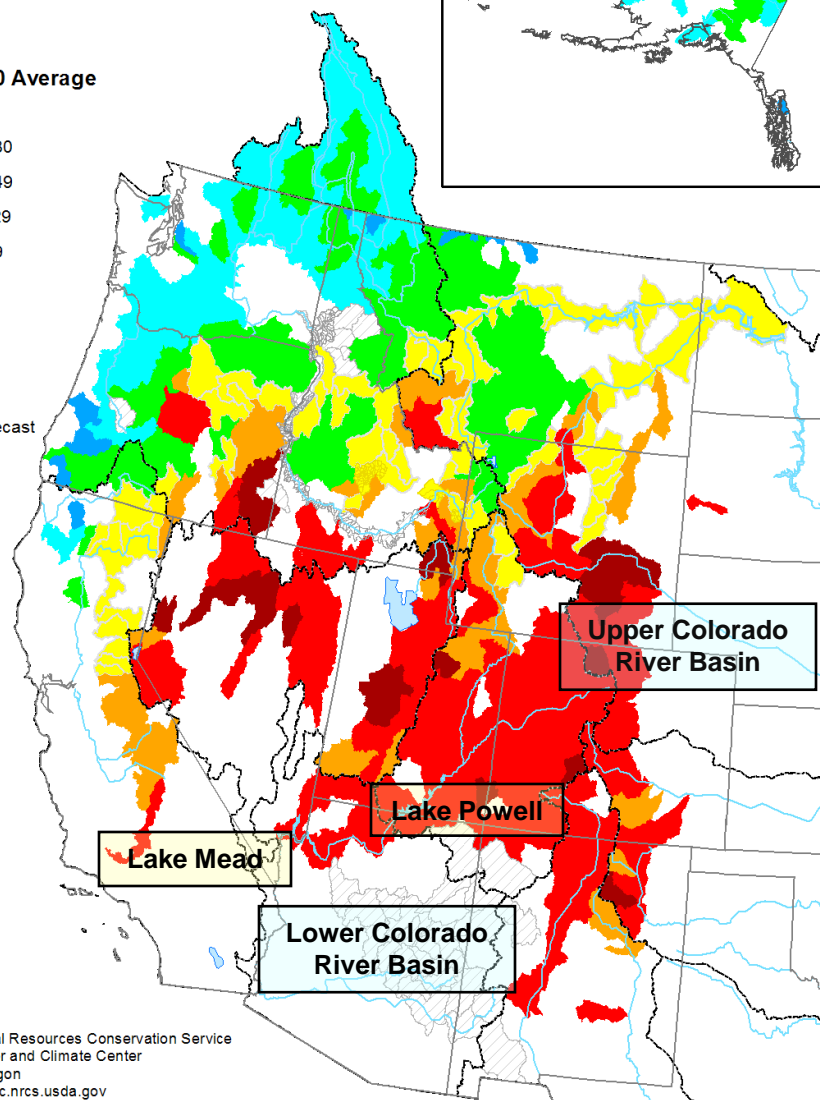
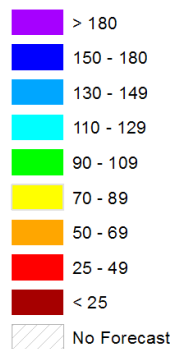


Prepared by  
NOAA, National Weather Service  
Colorado Basin River Forecast Center  
Salt Lake City, Utah  
[www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)



# Spring and Summer Streamflow Forecasts as of May 1, 2012

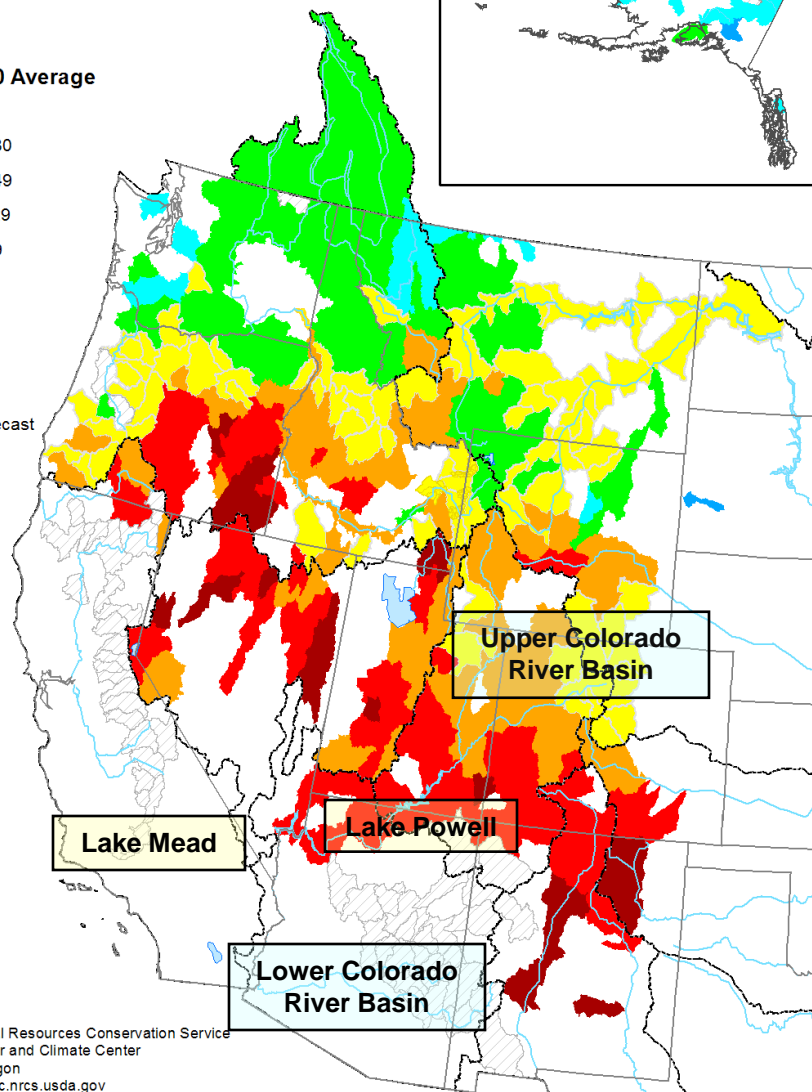
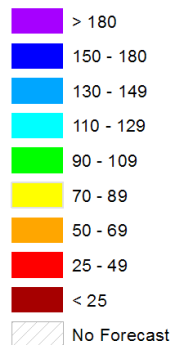
Percent  
1971 to 2000 Average



Prepared by  
USDA, Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

# Spring and Summer Streamflow Forecasts as of May 1, 2013

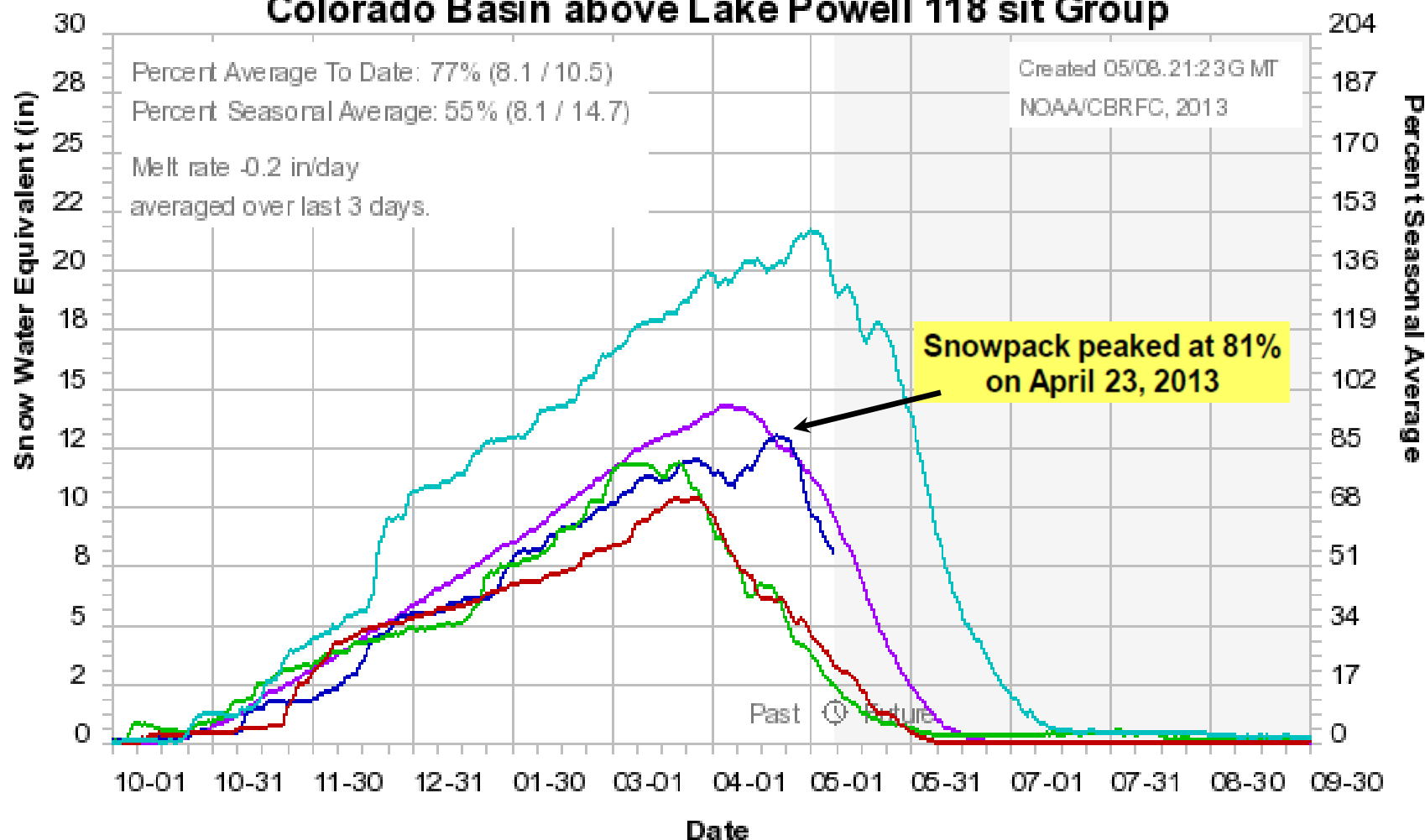
Percent  
1981 to 2010 Average



Prepared by  
USDA, Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

# Colorado River Basin Water Supply Outlook

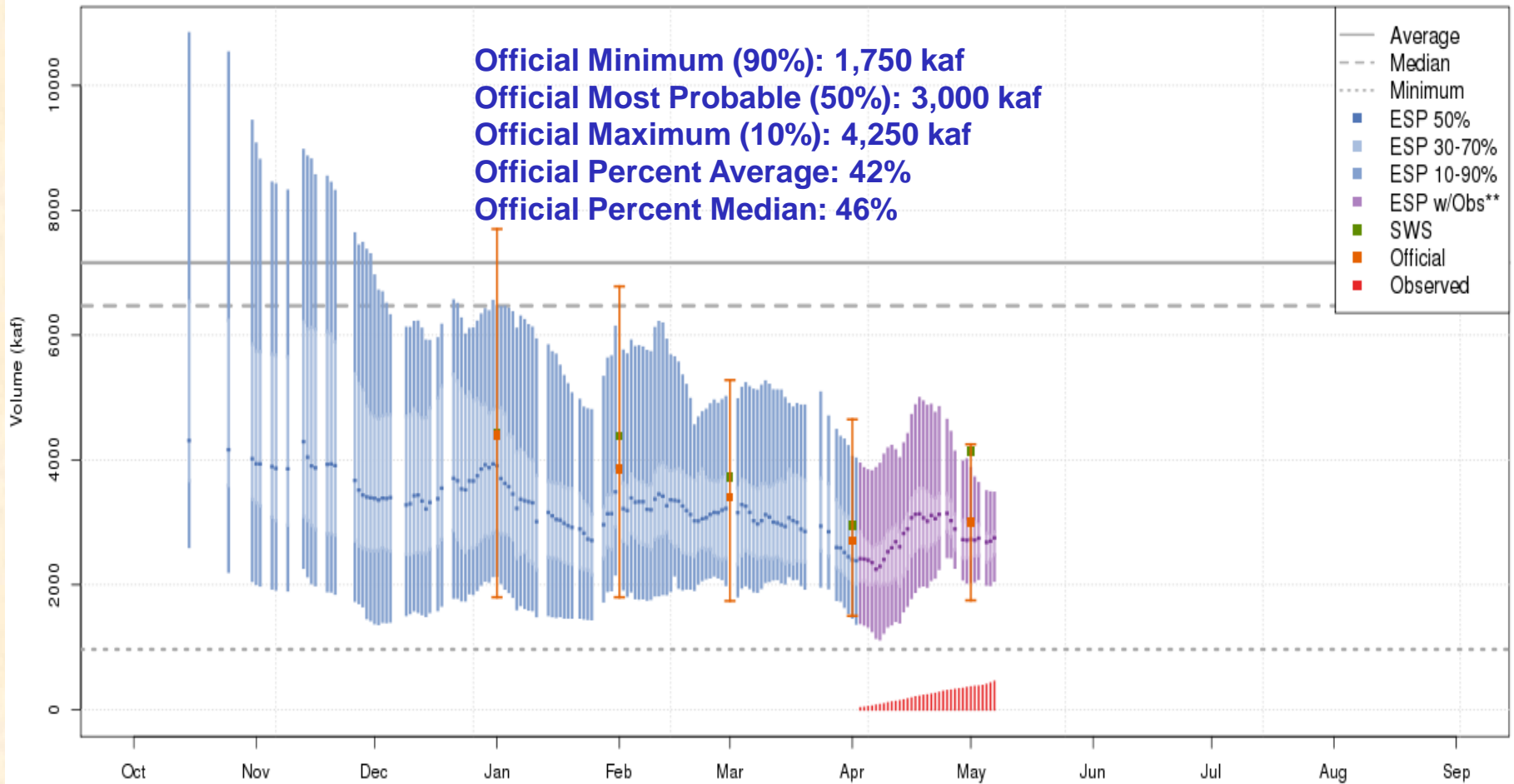
## Colorado Basin River Forecast Center Colorado Basin above Lake Powell 118 sit Group



Median 1981-2010 2013 2012 2010 2011

# 2013 Final Forecast May 2013

2013 Runoff Forecast Apr-Jul  
Colorado - Lake Powell- Glen Cyn Dam- At (GLDA3)



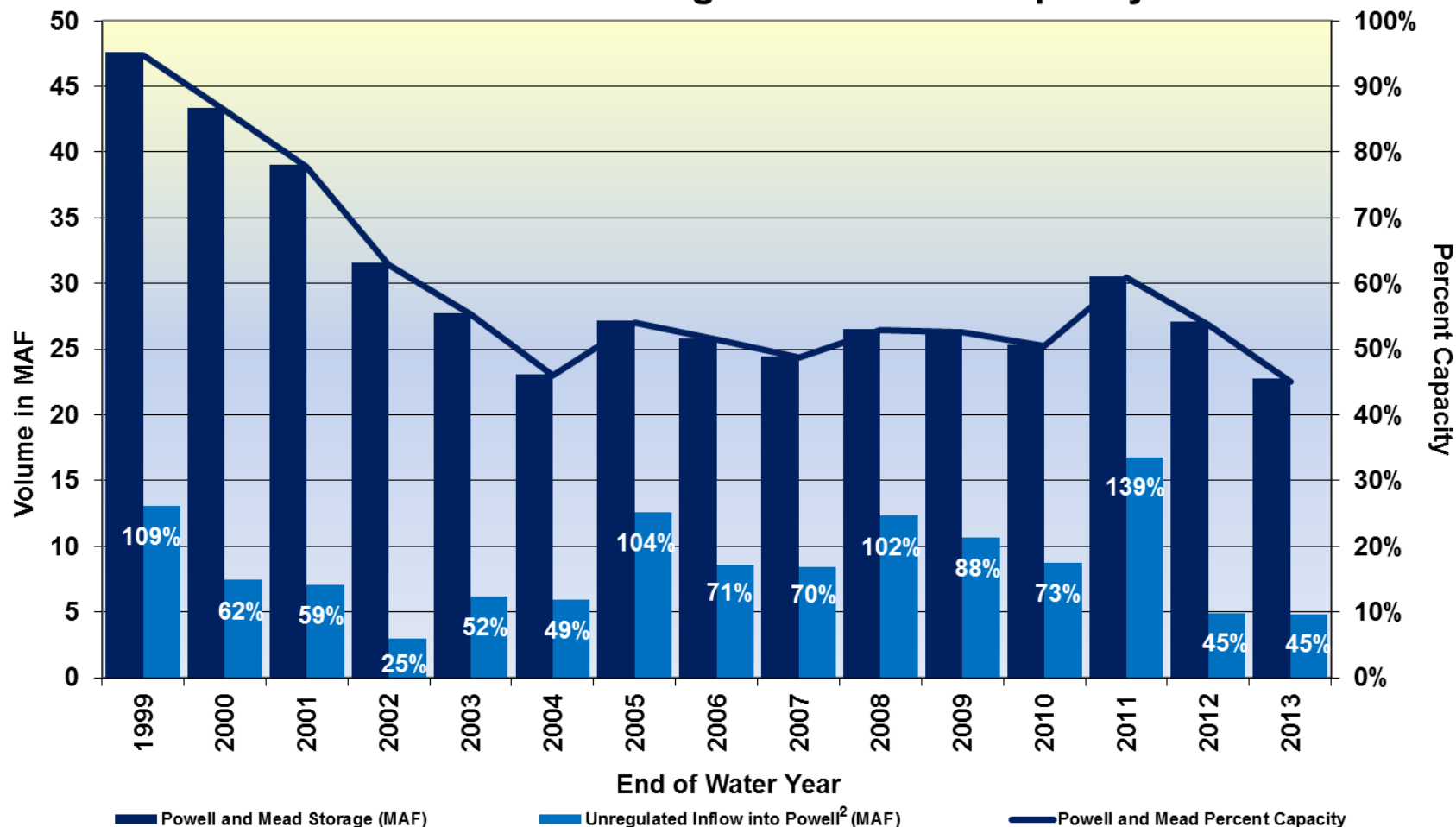
Plot Created 2013-05-08 13:17:22, Lastest ESP Run from Lastest ESP Run from 2013-05-07, CBRFC / NWS / NOAA  
Maximum of 15316.1 in 1984, Minimum of 964 in 2002, Average/Median for 1981-2010.

\*\*These ESP days include observed



# State of the System (1999-2013)

## Unregulated Inflow into Lake Powell Powell-Mead Storage and Percent Capacity



<sup>1</sup> Values for water year 2013 are projected. Unregulated inflow is based on the latest CBRFC forecast. Storage and percent capacity are based on the May 2013 24-Month Study.

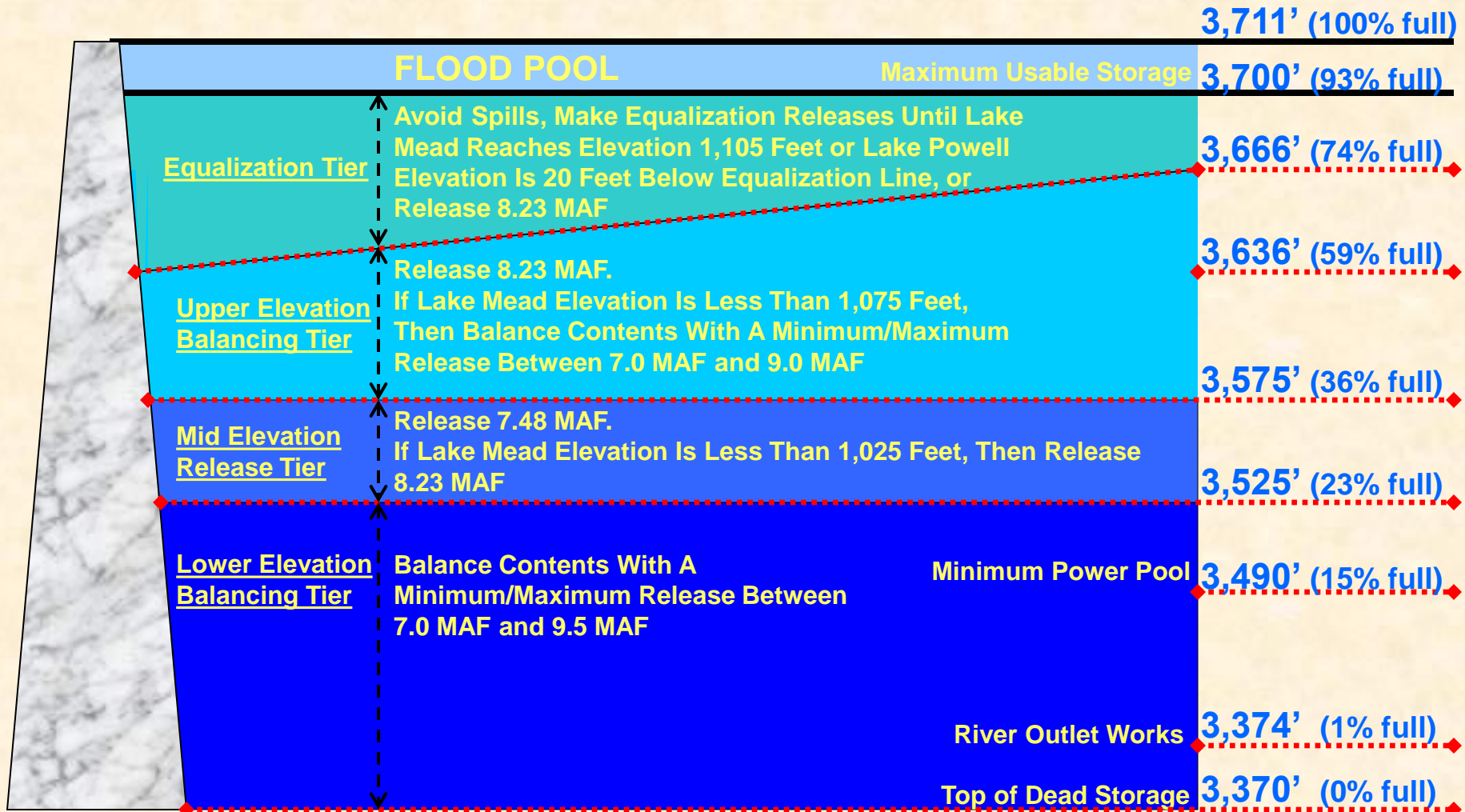
<sup>2</sup> Percentages at the top of the light blue bars represent percent of average unregulated inflow into Lake Powell for a given water year. Water years 1999-2011 are based on the 30-year average from 1971 to 2000. Water years 2012-2013 are based on the 30-year average from 1981-2010.

# Colorado River Basin Water Supply Outlook

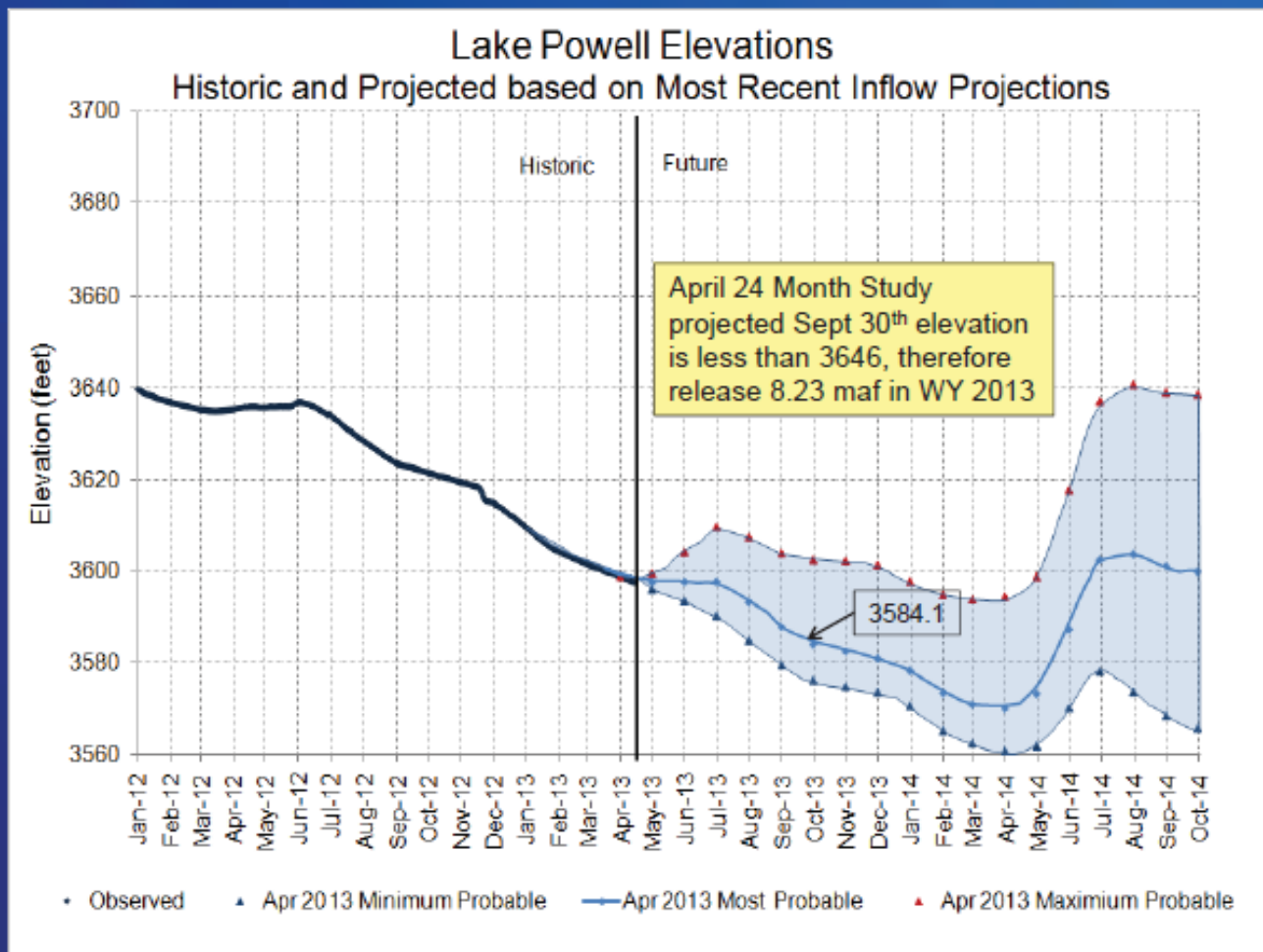
- April to June 2013 Inflow Into Lake Powell – 3.0 MAF (42% of Normal)
- Water Year 2013 Inflow Into Lake Powell – 4.8 MAF (42% of Normal)  
(Water Year 2011 Inflow into Lake Powell – 15.97 MAF [139% of Normal]).
- Water Year 2013 Release from Lake Powell – 8.23 MAF Release to the Lower Basin.
- Water Year 2014 Release from Lake Powell – could be either 8.23 MAF or 7.48 MAF Release to the Lower Basin. The May 24-month Study indicates that it will be an 8.23 MAF release. Reclamation's August 24-Month Study will determine the final Water Year release from Lake Powell.
- Lake Powell and Lake Mead Storage will generally decline through 2014.

# Lake Powell

## Key Operational Elevations – Interim Period

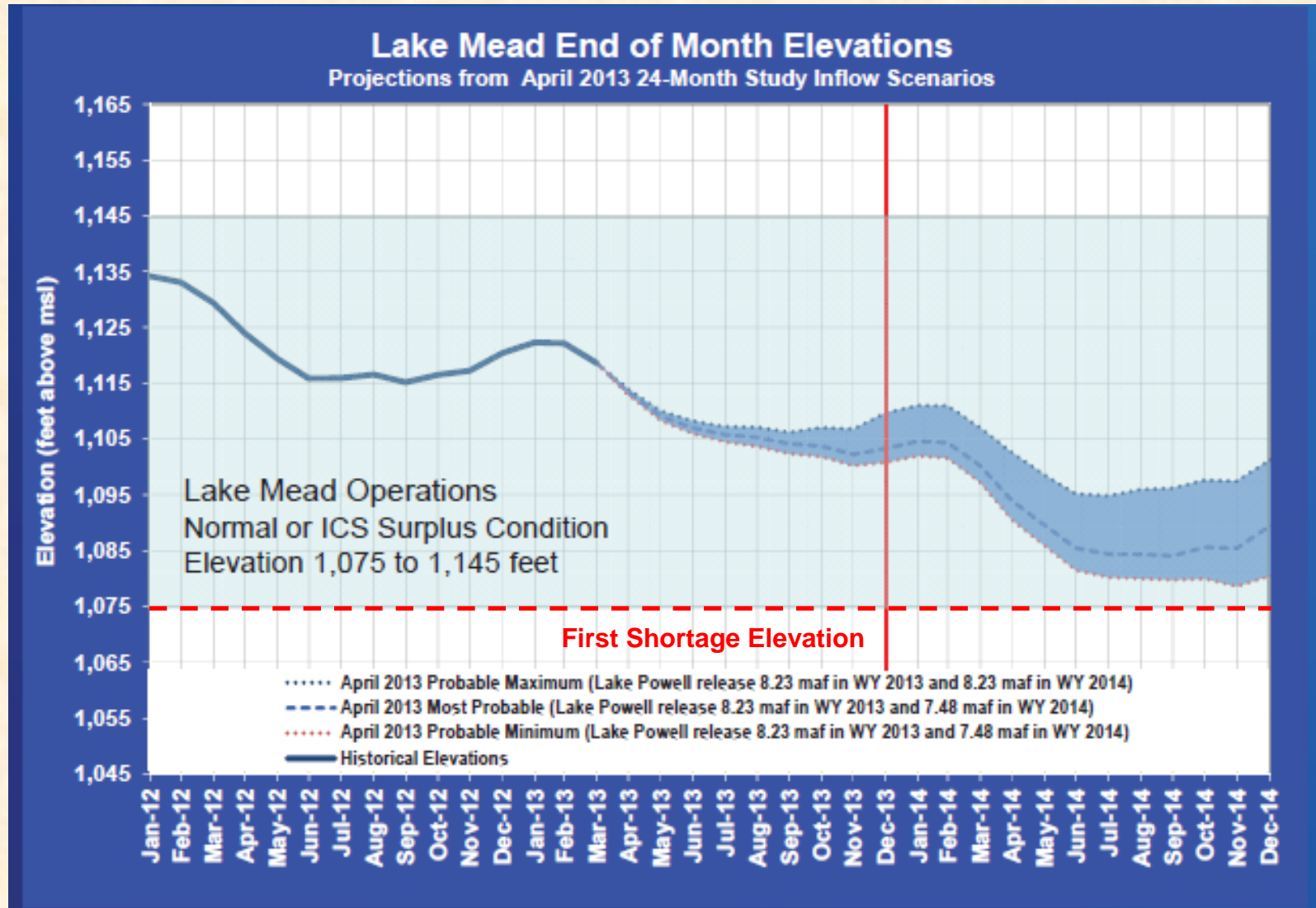


# Colorado River Basin Water Supply Outlook



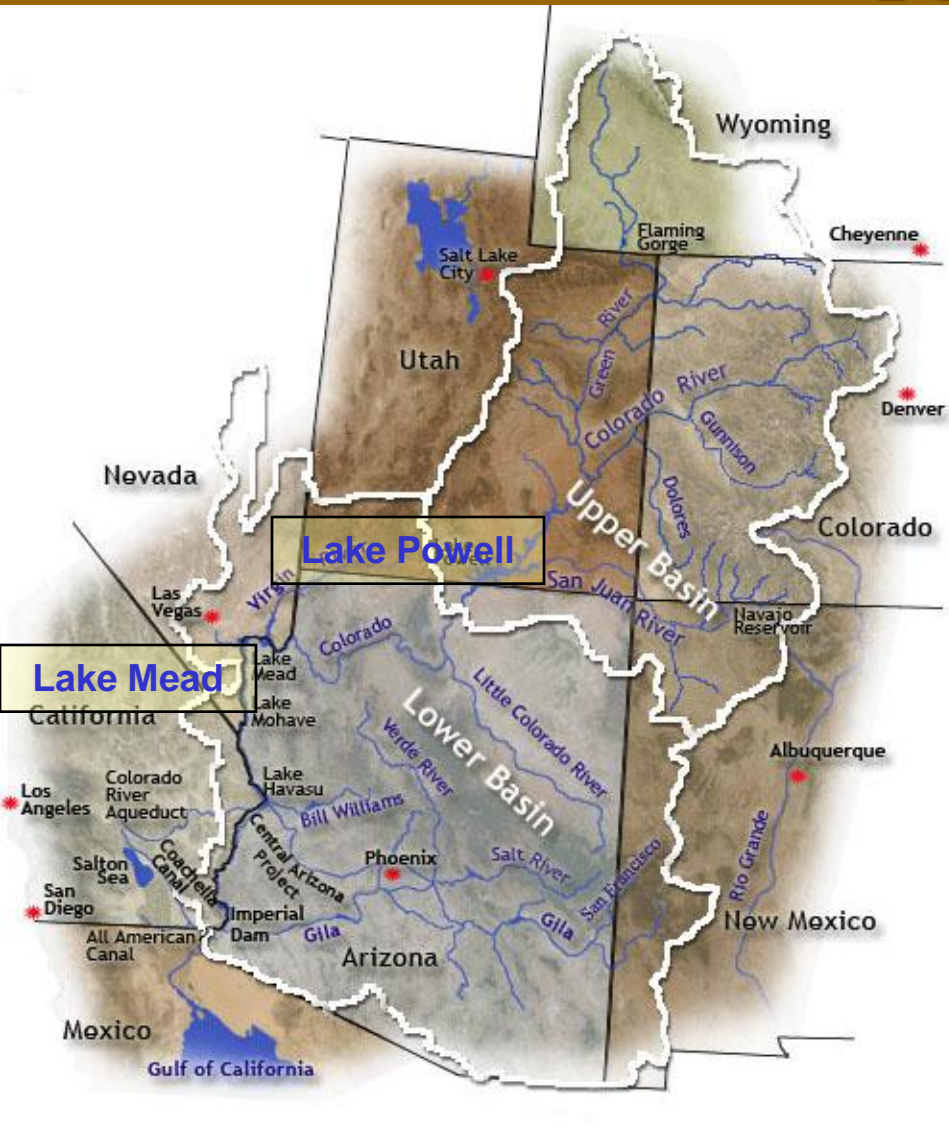
RECLAMATION

# Colorado River Basin Water Supply Outlook





# Colorado River Basin Water Supply Outlook



**Total Reservoir System Contents:**

**31.1 MAF or 52%**

**(As of May 6, 2013)**

**Total Reservoir System Contents  
Last Year:**

**37.1 MAF or 62%**



# Colorado River Basin Water Supply Outlook

**LAKE POWELL**  
Capacity – 24.5 MAF  
05/06/2013 - 47% full  
Contents 11.4 MAF  
Elevation – 3,596'

Glen Canyon  
Dam

Page

©2010 Europa Technologies

©2010 Google

Image USDA Farm Service Agency

Image ©2010 DigitalGlobe

©2009 Google

Imagery Dates: Jun 8, 2007 - Jun 23, 2009

37°01'38.17" N 111°22'58.22" W elev 3887 ft

Eye alt 37.88 mi



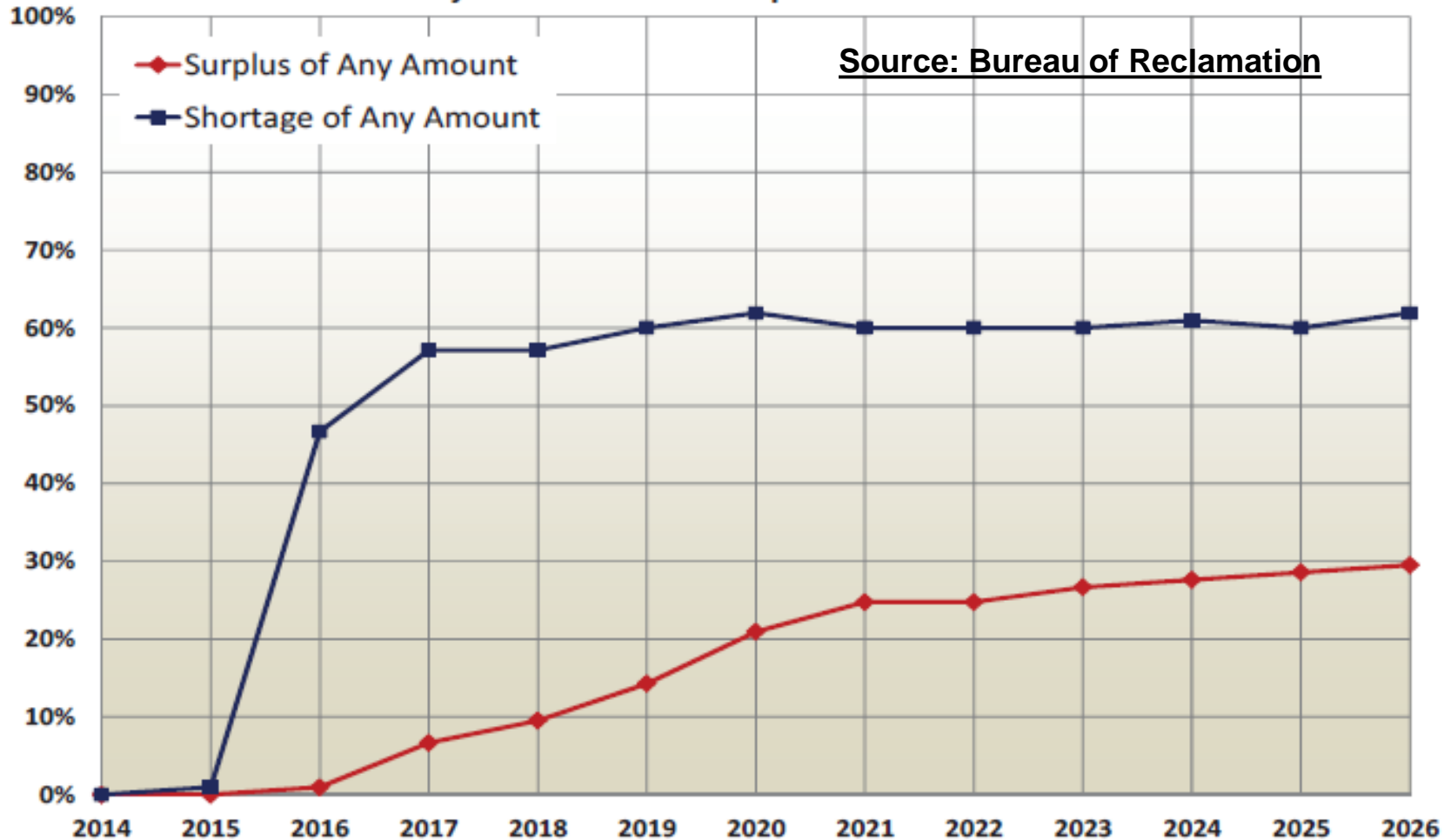
# Colorado River Basin Water Supply Outlook



# Lower Colorado River Basin Chance of a Shortage or Surplus

Probabilities of Lower Basin Surplus or Shortage  
Projections from the April 2013 CRSS Run<sup>1,2</sup>

Source: Bureau of Reclamation

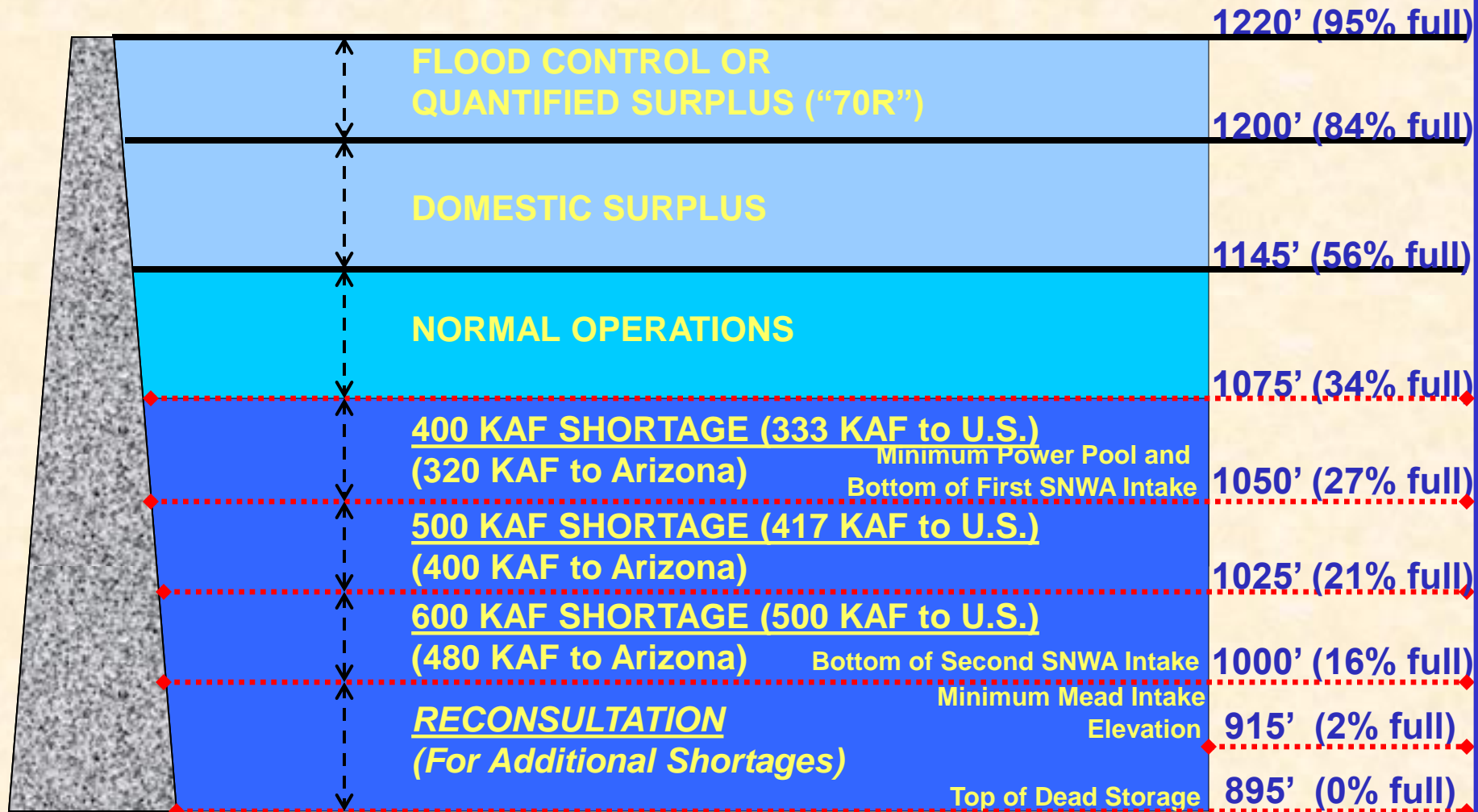


<sup>1</sup> Reservoir initial conditions based on projected levels on December 31, 2013, from the April 2013 24-Month Study.

<sup>2</sup> Hydrologic inflow traces based on the resampling of the observed natural flow record from 1906-2010.

# Lake Mead

## Key Operational Elevations – Interim Period



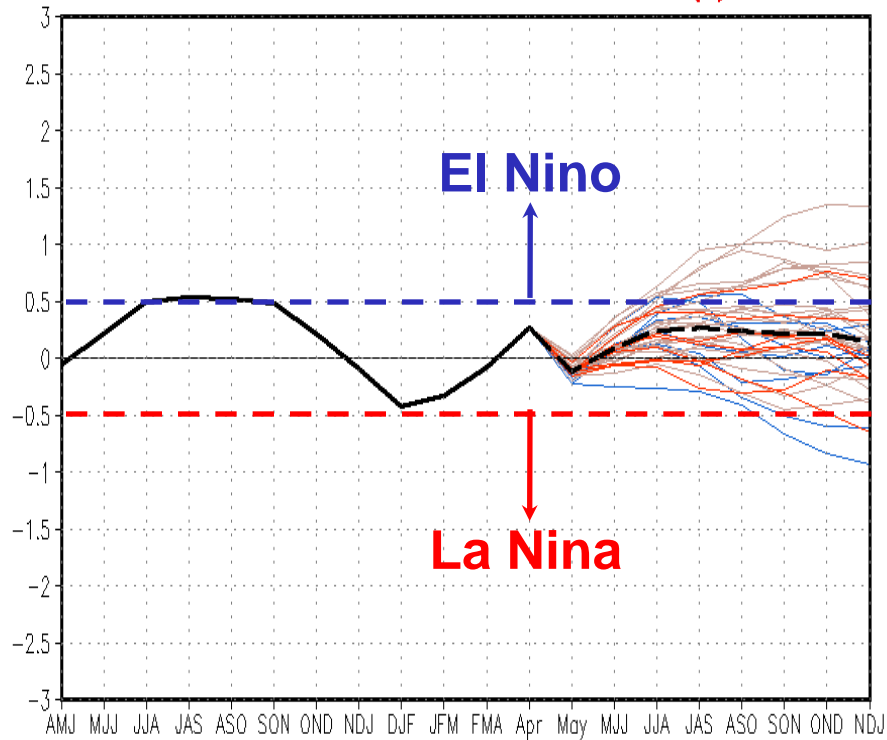


# What About Next Year?

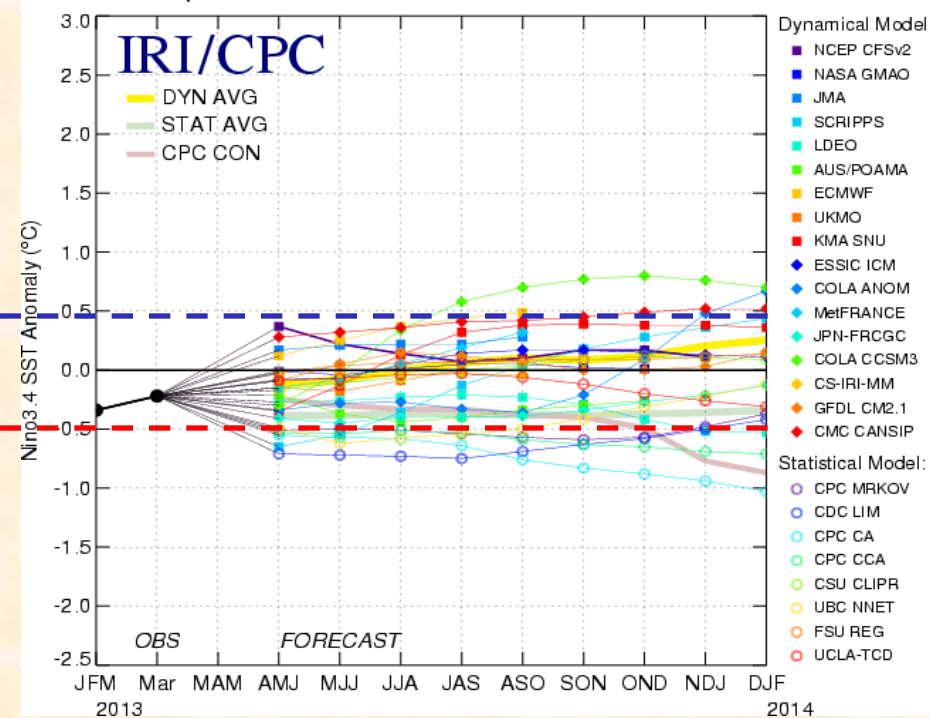
## La Nina Year ? ! ? El Nino Year ? ! ?

## La Nada Year ? ! ?

CFSv2 forecast Nino3.4 SST anomalies (K)



Mid-April 2013 Plume of Model ENSO Predictions

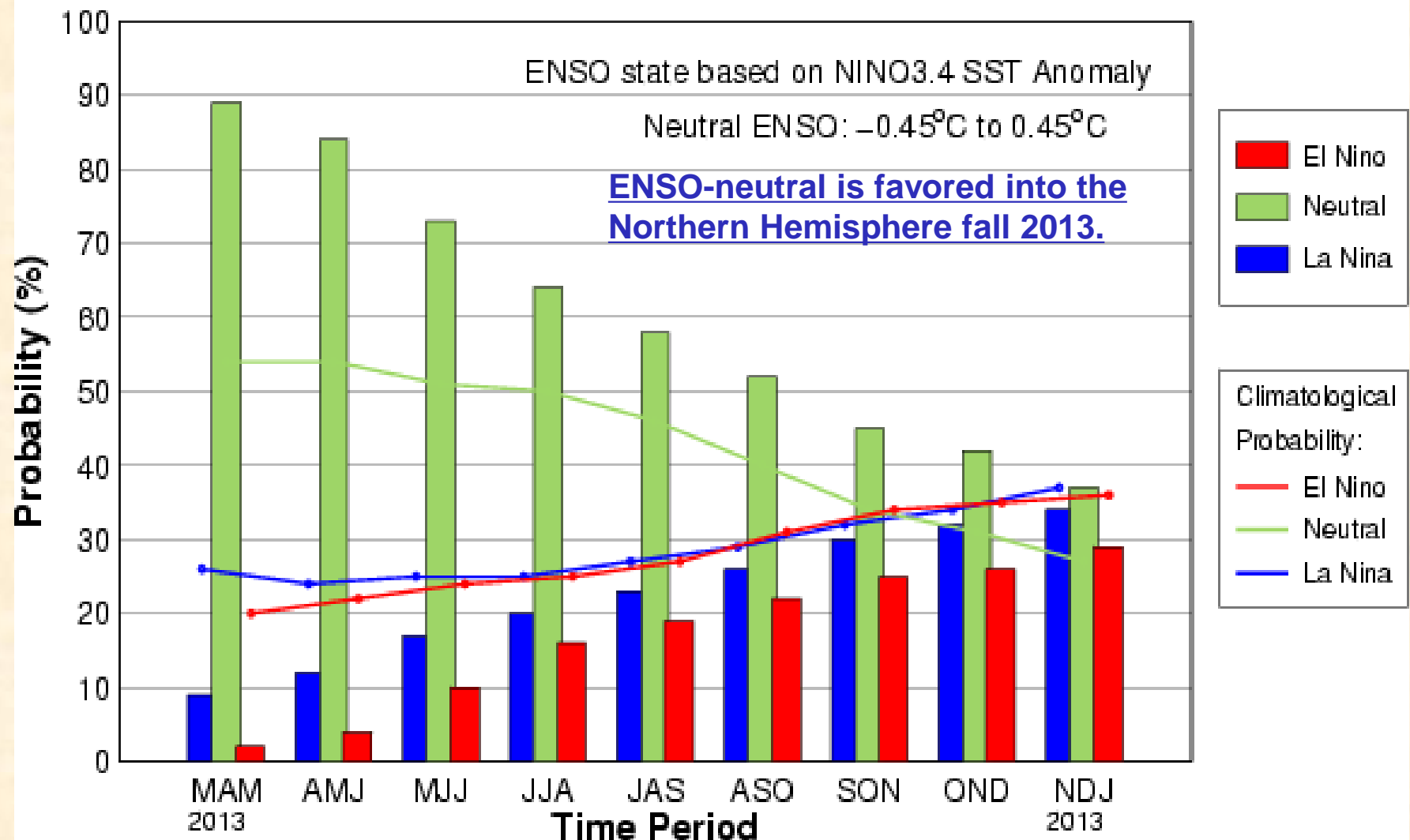


# What About Next Year?

## La Nina Year ? ! ? El Nino Year ? ! ?

### La Nada ? ! ?

#### Early-Apr CPC/IRI Consensus Probabilistic ENSO Forecast



A satellite image of Las Vegas, Nevada, from 1986. The image shows the city's urban area in the center-left, characterized by a dense grid of buildings and roads. To the right of the city is a large, dark, irregularly shaped body of water, likely Lake Mead. The surrounding landscape is arid and hilly, with some sparse vegetation. The word "Google" is overlaid in the bottom left corner, and the year "1986" is overlaid in the bottom right corner.

Google

1986

Las Vegas Urban Growth, 1986-2012